

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

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324. (Amended) A stabilizing composition for a vinyl halide resin comprising:

(a) a metal containing stabilizer of formula I



in which,

R represents an alkyl group, and

SR' SR'' represents a mercaptide ligand

~~n = 1 or 2~~

~~x = greater than 0 to 3, and~~

~~x+2y = 4-n; and~~

(b) a mercapto alkanol ester of a carboxylic acid ~~providing a source of mercaptan exceeding that required to saturate which is present in an amount by weight from about 2 to about 25 times the amount by weight of the Sn component of in said metal containing stabilizer metal containing stabilizer and said mercapto alkanol ester are present in an amount effective to stabilize a vinyl halide resin against heat and/or light.~~

wherein said mercapto alkanol ester replaces from about 20% to about 90% by weight of the metal containing stabilizer and wherein said composition has a heat or light stability at least comparable to a composition where said mercapto alkanol ester does not replace about 20% to about 90% by weight of the metal containing stabilizer.

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325. (Previously Presented) The composition of claim 324, wherein said mercaptide ligand is a derivative of a carboxylic acid, a polycarboxylic acid, a mercaptan, a mercaptoacid, a mercaptoalcohol, a mercaptoacid ester, or a mercaptoalcohol ester.

326. (Amended) The composition of claim 325, wherein said mercaptide ligand is an ester of mercaptocarboxylic acid, a 2-mercptoalkanol ester of a carboxylic acid, a 2-mercptoalkanol, or an alkyl thiol, or an aromatic thiol.

327. (Previously Presented) The composition of claim 324, wherein the mercapto alkanol ester of a carboxylic acid has the formula:

RCOOR'SH

where R is a linear or branched alkyl or alkenyl, aryl or aralkyl; and R' represents a C₂ to C₁₈ alkylene.

328. (Previously Presented) The composition of claim 327, where R contains 6 to 38 carbon atoms.

329. (Previously Presented) The composition of claim 327, where R contains 8 to 18 carbon atoms.

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330. (Amended) The composition of claim 327, wherein R contains ~~1 to 8~~ at least one, but less than 6 carbon atoms.

331. (Amended) The composition of claim 327, where the carboxylic acid is at least one chosen from caprylic, pelargonic, capric, undecanoic, lauric, myristic, palmitic, stearic, isostearic, 2-ethylhexanoic, neodecanoic, oleic, or linoleic, and mixtures thereof.

332. (Amended) The composition of claim 327 324, wherein the mercapto alkanol ester of a carboxylic acid is at least one chosen from mercapto ethyl stearate, 3-thio-glyceryl myristate, mercapto ethyl palmitate, mercaptoethyl oleate, and or mercapto ethyl myristate.

333. (Amended) The composition of claim 327, wherein the mercapto alkanol ester of a carboxylic acid is present in the range of 0.01 % wt. to 5 % wt. of the vinyl halide resin.

334. (Previously Presented) The composition of claim 327, wherein the mercapto alkanol ester of a carboxylic acid is present in the range of 0.1 % wt. to 1.0 % wt. of the vinyl halide resin.

335. (Previously Presented) The composition of claim 324, wherein the vinyl halide resin is polyvinyl chloride.

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336. (Amended) A stabilizing composition for a vinyl halide resin comprising:

(a) a metal containing stabilizer of formula II



in which,

R represents an alkyl group

SR' SR'' represents a mercaptide ligand

n = 1 or 2, and

x = 4-n, where x is an integer; and

(b) a mercapto alkanol ester of a carboxylic acid ~~providing a source of mercaptan exceeding that required to saturate which is present in an amount from 2 to 25 times the amount of the Sn component of~~ in said metal containing stabilizer, ~~wherein said metal containing stabilizer and said mercapto alkanol ester are present in an amount effective to stabilize a vinyl halide resin against heat and/or light wherein said mercapto alkanol ester replaces from about 20% to about 90% by weight of the metal containing stabilizer and wherein said composition has a heat or light stability at least comparable to a composition where said mercapto alkanol ester does not replace about 20% to about 90% by weight of the metal containing stabilizer.~~

337. (Previously Presented) The composition of claim 336, wherein said mercaptide ligand is a derivative of a carboxylic acid, a polycarboxylic acid, a mercaptan, a mercaptoacid, a mercaptoalcohol, a mercaptoacid ester, or a mercaptoalcohol ester.

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338. (Amended) The composition of claim 337, wherein said mercaptide ligand is an ester of mercaptocarboxylic acid, a 2-mercaptoalkanol ester of a carboxylic acid, a 2-mercaptoalkanol, or an alkyl thiol, or an aromatic thiol.

339. (Previously Presented) The composition of claim 336, wherein the mercapto alkanol ester of a carboxylic acid has the formula:



where R is a linear or branched alkyl or alkenyl, aryl or aralkyl; and

R' represents a C₂ to C₁₈ alkylene.

340. (Previously Presented) The composition of claim 339, where R contains 6 to 38 carbon atoms.

341. (Previously Presented) The composition of claim 339, where R contains 8 to 18 carbon atoms.

342. (Amended) The composition of claim 339, wherein R contains 1 to 8 at least one, but less than 6 carbon atoms.

343. (Amended) The composition of claim 339, where the carboxylic acid is at least one chosen from caprylic, pelargonic, capric, undecanoic, lauric, myristic, palmitic, stearic, isostearic, 2-ethylhexanoic, neodecanoic, oleic, or linoleic, and mixtures thereof.

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344. (Amended) The composition of claim 339 336, wherein the mercapto alkanol ester of a monocarboxylic carboxylic acid is at least one chosen from mercapto ethyl stearate, 3-thio-glyceryl myristate, mercapto ethyl palmitate, mercaptoethyl oleate, and or mercapto ethyl myristate

345. (Amended) The composition of claim 339, wherein the mercapto alkanol ester of a monocarboxylic carboxylic acid is present in the range of 0.01 % wt. to 5 % wt. of the vinyl halide resin.

346. (Previously Presented) The composition of claim 339, wherein the mercapto alkanol ester of a carboxylic acid is present in the range of 0.1 % wt. to 1.0 % wt. of the vinyl halide resin.

347. (Previously Presented) The composition of claim 336, wherein the vinyl halide resin is polyvinyl chloride.

348. (Amended) The A composition comprising:

(a) a monoalkyltin-tris(mercapto alkanol ester of a carboxylic acid) or dialkyltin bis(mercapto alkanol ester of a carboxylic acid) compound wherein the alkyl is a C₁ to C₈ alkyl; and

(b) a mercapto alkanol ester of a carboxylic acid ~~providing a source of mercaptan exceeding that required to saturate~~ which is present in an amount from 2 to

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25 times the amount of the Sn tin component of in said metal-containing stabilizer,

monoalkyltin- or dialkyltin bis(mercapto alkanol ester of a carboxylic acid),

wherein said (a) and (b) components are present in an amount effective to
stabilize a vinyl halide resin against heat and/or

wherein said mercapto alkanol ester replaces from about 20% to about 90% by
weight of the metal containing stabilizer and wherein said composition has a heat or
light stability at least comparable to a composition where said mercapto alkanol ester
does not replace about 20% to about 90% by weight of the metal containing stabilizer.

349. (Amended) A method of stabilizing a vinyl halide resin comprising the steps of:

adding to the vinyl halide resin, in an amount effective to stabilize the vinyl halide
resin against heat and/or light,

(a) a metal containing stabilizer corresponding to formula I



in which,

R represents an alkyl group and

SR' SR'' represents a mercaptide ligand

n = 1 or 2

x = greater than 0 to 3, and

x+2y = 4-n; and

(b) a mercapto alkanol ester of a carboxylic acid providing a source of
mercaptan exceeding that required to saturate which is added to said resin in an

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amount from about 2 to 25 times the amount of the Sn component of in said metal containing stabilizer,

wherein said mercapto alkanol ester replaces from about 20% to about 90% by weight of the metal containing stabilizer and wherein said composition has a heat or light stability at least comparable to a composition where said mercapto alkanol ester does not replace about 20% to about 90% by weight of the metal containing stabilizer.

350. (Previously Presented) The method of claim 349, wherein said mercaptide ligand is a derivative of a carboxylic acid, a polycarboxylic acid, a mercaptan, a mercaptoacid, a mercaptoalcohol, a mercaptoacid ester, or a mercaptoalcohol ester.

351. (Amended) The method of claim 349, wherein said mercaptide ligand is an ester of mercaptocarboxylic acid, a 2-mercaptoalkanol ester of a carboxylic acid, a 2-mercaptoalkanol, or an alkyl thiol, or an aromatic thiol.

352. (Previously Presented) The method of claim 349, wherein the mercapto alkanol ester of a carboxylic acid has the formula:



where R is a linear or branched alkyl or alkenyl, aryl or aralkyl; and R' represents a C₂ to C₁₈ alkylene.

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353. (Amended) The method of claim 349, where the carboxylic acid is at least one chosen from caprylic, pelargonic, capric, undecanoic, lauric, myristic, palmitic, stearic, isostearic, 2-ethylhexanoic, neodecanoic, oleic, or linoleic, and mixtures thereof.

354. (Amended) The method of claim 349, wherein the mercapto alkanol ester of a carboxylic acid is at least one chosen from mercapto ethyl stearate, 3-thio-glyceryl myristate, mercapto ethyl palmitate, mercaptoethyl oleate, and or mercapto ethyl myristate.

355. (Amended) The method of claim 349, wherein the mercapto alkanol ester of a carboxylic acid is present in the range of 0.01 % wt. to 5.0 % wt of the vinyl halide resin.

356. (Previously Presented) The method of claim 349, wherein the mercapto alkanol ester of a carboxylic acid is present in the range of 0.1 % wt. to 1.0 % wt. of the vinyl halide resin.

357. (Previously Presented) The method of claim 349, wherein the vinyl halide resin is polyvinyl chloride.

358. (Amended) A method of stabilizing a vinyl halide resin comprising the steps of:
~~adding to the vinyl halide resin, in an amount effective to stabilize the vinyl halide resin against heat and/or light,~~

(a) a metal containing stabilizer of formula II

$R_A Sn(SR')_x$ $R_n Sn(SR'')_x$ (II)

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in which,

R represents an alkyl group

SR' SR'' represents a mercaptide ligand

n = 1 or 2, and

x = 4-n, wherein x is an integer; and

(b) a mercapto alkanol ester of a carboxylic acid providing a source of mercaptan exceeding that required to saturate which is added to said resin in an amount from about 2 to 25 times the amount of the Sn component of in said metal containing stabilizer.

wherein said mercapto alkanol ester replaces from about 20% to about 90% by weight of the metal containing stabilizer and wherein said composition has a heat or light stability at least comparable to a composition where said mercapto alkanol ester does not replace about 20% to about 90% by weight of the metal containing stabilizer.

359. (Previously Presented) The method of claim 358, wherein said mercaptide ligand is a derivative of a carboxylic acid, a polycarboxylic acid, a mercaptan, a mercaptoacid, a mercaptoalcohol, a mercaptoacid ester, or a mercaptoalcohol ester.

360. (Amended) The method of claim 358, wherein said mercaptide ligand is an ester of mercaptocarboxylic acid, a 2-mercptoalkanol ester of a carboxylic acid, a 2-mercptoalkanol, or an alkyl thiol, or an aromatic thiol.

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361. (Amended) The method of claim 358, wherein the mercapto alkanol ester of a monocarboxylic carboxylic acid has the formula:



where R is a linear or branched alkyl or alkenyl, aryl or aralkyl; and
R' represents a C₂ to C₁₈ alkylene.

362. (Amended) The method of claim 358, where the carboxylic acid is at least one chosen from caprylic, pelargonic, capric, undecanoic, lauric, myristic, palmitic, stearic, isostearic, 2-ethylhexanoic, neodecanoic, oleic, or linoleic, ~~and mixtures thereof~~.

363. (Amended) The method of claim 358, wherein the mercapto alkanol ester of a carboxylic acid is at least one chosen from mercapto ethyl stearate, 3-thio-glyceryl myristate, mercapto ethyl palmitate, mercaptoethyl oleate, and or mercapto ethyl myristate

364. (Previously Presented) The method of claim 358, wherein the mercapto alkanol ester of a carboxylic acid is present in the range of 0.01 % wt. to 5 % wt. of the vinyl halide resin.

365. (Previously Presented) The method of claim 358, wherein the mercapto alkanol ester of a carboxylic acid is present in the range of 0.1 % wt. to 1.0 % wt. of the vinyl halide resin.

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366. (Previously Presented) The method of claim 358, wherein the vinyl halide resin is polyvinyl chloride.

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367. (New) The composition of claim 324, where the carboxylic acid comprises at least one natural fatty acid present in peanut oil, tall oil, safflower oil, soybean oil, tallow, lanolin, palm oil, or coconut oil.

368. (New) The composition of claim 336, where the carboxylic acid comprises at least one natural fatty acid present in peanut oil, tall oil, safflower oil, soybean oil, tallow, lanolin, palm oil, or coconut oil.

369. (New) The composition of claim 349, where the carboxylic acid comprises at least one natural fatty acid present in peanut oil, tall oil, safflower oil, soybean oil, tallow, lanolin, palm oil, or coconut oil.

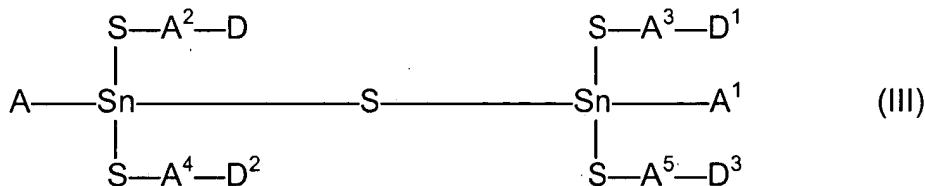
370. (New) The composition of claim 358, where the carboxylic acid comprises at least one natural fatty acid present in peanut oil, tall oil, safflower oil, soybean oil, tallow, lanolin, palm oil, or coconut oil.

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371. (New) A stabilizing composition for a vinyl halide resin comprising:

(a) a metal containing stabilizer of formula III

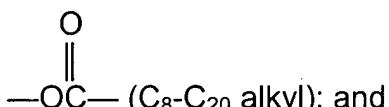


in which,

A and A¹ represent at least one alkyl of 1 to 12 carbon atoms, where A and A¹ can be the same or different;

A², A³, A⁴, and A⁵ represent at least one lower alkylene;

D, D¹, D², and D³ represent at least one of OH; — (C₆-C₁₈ alkyl); or



(b) a mercapto alkanol ester of a carboxylic acid which is present in an amount by weight from about 2 to about 25 times the amount by weight of the Sn in said metal containing stabilizer,

wherein said mercapto alkanol ester replaces from about 20% to about 90% by weight of the metal containing stabilizer and wherein said composition has a heat or light stability at least comparable to a composition where said mercapto alkanol ester does not replace about 20% to about 90% by weight of the metal containing stabilizer.

372. (New) The composition of claim 371, where the carboxylic acid is at least one chosen from caprylic, pelargonic, capric, undecanoic, lauric, myristic, palmitic, stearic, isostearic, 2-ethylhexanoic, neodecanoic, oleic, or linoleic.

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373. (New) The composition of claim 371, wherein the mercapto alkanol ester of a carboxylic acid is at least one chosen from mercapto ethyl stearate, 3-thio-glyceryl myristate, mercapto ethyl palmitate, mercaptoethyl oleate, or mercapto ethyl myristate.

374. (New) The composition of claim 373, wherein the mercapto alkanol ester of a carboxylic acid is present in the range of 0.01 % wt. to 5 % wt of the vinyl halide resin.

375. (New) The composition of claim 374, wherein the mercapto alkanol ester of a carboxylic acid is present in the range of 0.1 % wt. to 1.0 % wt. of the vinyl halide resin.

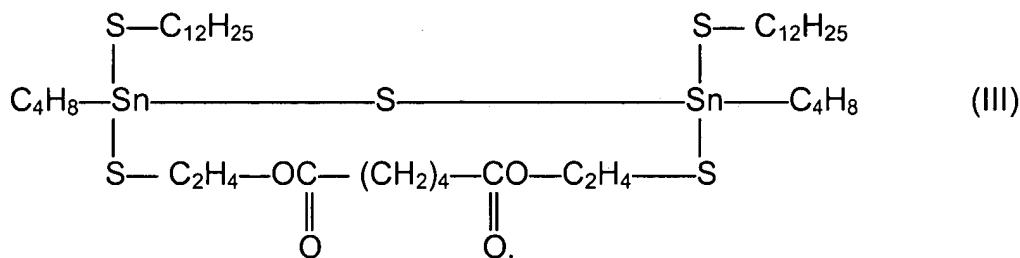
376. (New) The composition of claim 375, wherein the vinyl halide resin is polyvinyl chloride.

377. (New) The composition of claim 371, where the carboxylic acid comprises at least one natural fatty acid present in peanut oil, tall oil, safflower oil, soybean oil, tallow, lanolin, palm oil, or coconut oil.

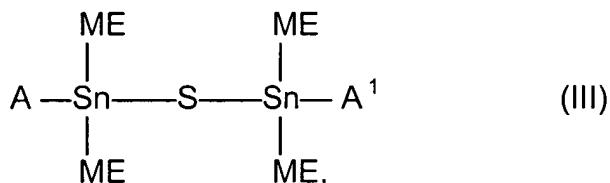
378. (New) The composition of claim 371, wherein A and A¹ comprise at least one of methyl, butyl or octyl.

379. (New) The composition of claim 371, wherein at least one of A², A³, A⁴, and A⁵ is ethylene.

380. (New) The composition of claim 371, wherein said a metal containing stabilizer of formula III is:



381. (New) The composition of claim 371, wherein said metal containing stabilizer of formula III is:



where

A and A¹ represent methyl, butyl or octyl and can be the same or different, and

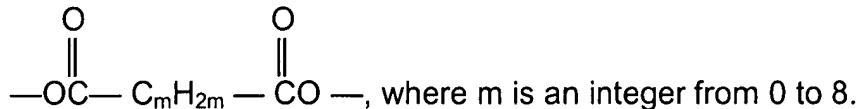
ME represents a mercaptoethyl stearate, a mercaptoethyl oleate, or a mercaptoethyl linoleate and can be the same or different.

382. (New) The composition of claim 381, wherein A and A¹ are both butyl and ME is mercaptoethyl oleate.

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383. (New) The composition of claim 371, wherein the combination of D and D¹ or the combination of D² and D³ form the group



384. (New) A stabilizing composition for a vinyl halide resin comprising:

(a) at least two metal containing stabilizers chosen from formulas I, II, and III, wherein

formula I is:

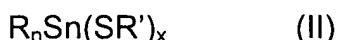


in which,

R represents an alkyl group, and

SR" represents a mercaptide ligand,

formula II is:



in which,

R represents an alkyl group

SR" represents a mercaptide ligand,

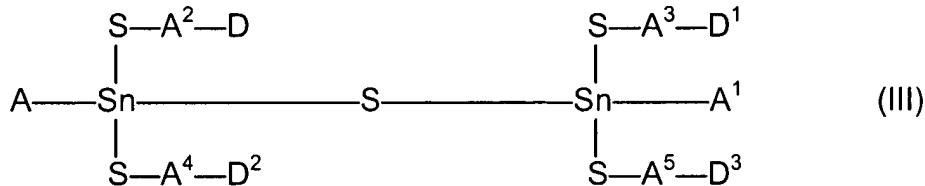
n = 1 or 2, and

x = 4-n, wherein x is an integer, and

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formula III is:

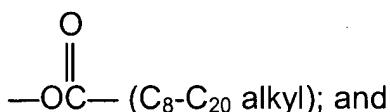


in which,

A and A¹ represent at least one alkyl of 1 to 12 carbon atoms, where A and A¹ can be the same or different;

A², A³, A⁴, and A⁵ represent at least one lower alkylene;

D, D¹, D², and D³ represent at least one of OH; — (C₆-C₁₈ alkyl); or



(b) a mercapto alkanol ester of a carboxylic acid which is present in an amount by weight from about 2 to about 25 times the amount by weight of the Sn in said metal containing stabilizers.

385. (New) The composition of claim 384, where the carboxylic acid is at least one chosen from caprylic, pelargonic, capric, undecanoic, lauric, myristic, palmitic, stearic, isostearic, 2-ethylhexanoic, neodecanoic, oleic, or linoleic.

386. (New) The composition of claim 384, wherein the mercapto alkanol ester of a carboxylic acid is at least one chosen from mercapto ethyl stearate, 3-thio-glyceryl myristate, mercapto ethyl palmitate, mercaptoethyl oleate, or mercapto ethyl myristate.

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387. (New) The composition of claim 386, wherein the mercapto alkanol ester of a carboxylic acid is present in the range of 0.01 % wt. to 5 % wt of the vinyl halide resin.

388. (New) The composition of claim 387, wherein the mercapto alkanol ester of a carboxylic acid is present in the range of 0.1 % wt. to 1.0 % wt. of the vinyl halide resin.

389. (New) The composition of claim 388, wherein the vinyl halide resin is polyvinyl chloride.

390. (New) The composition of claim 384, where the carboxylic acid comprises at least one natural fatty acid present in peanut oil, tall oil, safflower oil, soybean oil, tallow, lanolin, palm oil, or coconut oil.

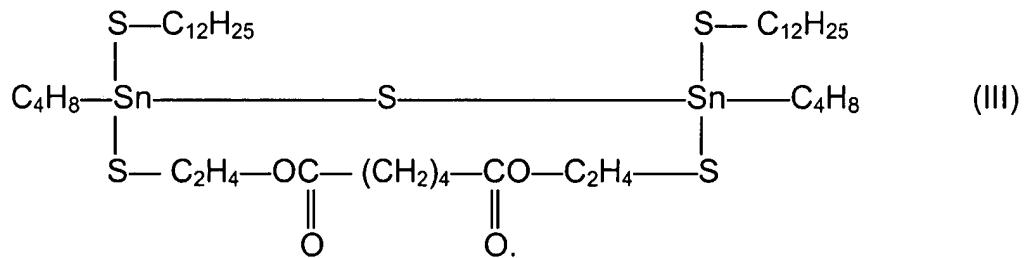
391. (New) The composition of claim 384, wherein A and A¹ comprise at least one of methyl, butyl or octyl.

392. (New) The composition of claim 384, wherein at least one of A², A³, A⁴, and A⁵ is ethylene.

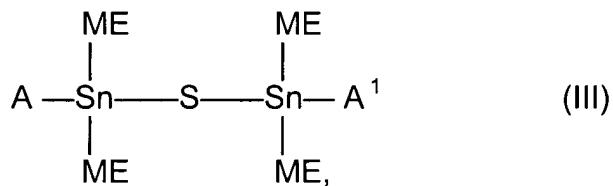
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393. (New) The composition of claim 384, wherein said a metal containing stabilizer of formula III is:



394. (New) The composition of claim 384, wherein said metal containing stabilizer of formula III is:



where

A and A¹ represent methyl, butyl or octyl and can be the same or different, and

ME represents a mercaptoethyl stearate, a mercaptoethyl oleate, or a mercaptoethyl linoleate and can be the same or different.

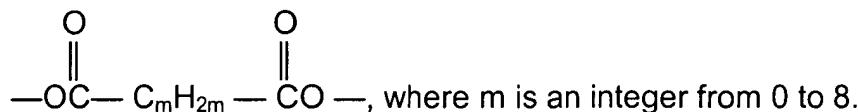
395. (New) The composition of claim 394, wherein A and A¹ are both butyl and ME is mercaptoethyl oleate.

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396. (New) The composition of claim 384, wherein the combination of D and D¹ or the combination of D² and D³ form the group



397. (New) The composition of claim 384, wherein said mercaptide ligand of formulas I and II is a derivative of carboxylic acid, a polycarboxylic acid, a mercaptan, a mercaptoacid, a mercaptoalcohol, a mercaptoacid ester, or a mercaptoalcohol ester.

398. (New) The composition of claim 397, wherein said mercaptide ligand is an ester of mercaptocarboxylic acid, a 2-mercptoalkanol ester of a carboxylic acid, a 2-mercptoalkanol, or an alkyl thiol.

399. (New) The composition of claim 384, wherein the mercapto alkanol ester of a carboxylic acid has the formula:



where R is a linear or branched alkyl or alkenyl, aryl or aralkyl; and
R' represents a C₂ to C₁₈ alkylene.

400. (New) The composition of claim 384, where R in formulas I and II contains 6 to 38 carbon atoms.

401. (New) The composition of claim 400, where R contains 8 to 18 carbon atoms.

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